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## ODONATA, ASTACIDAE AND UNIONIDAE COLLECTED ALONG THE ROCKCASTLE RIVER AT LIVINGSTON, KENTUCKY.

E. B. WILLIAMSON.

The few following records of two days collecting in Rockcastle County, Kentucky, near the headwaters of the Cumberland River on June 23 and 24, 1904, may be of interest. Since collecting along the Cumberland at Nashville, Tennessee, I have been desirous of following the same river among the hills of eastern Kentucky where I expected to find the Rockcastle a rapid mountain stream with waterfalls, deep pools and long, swift rapids. Such is far from its nature. Its bed in the soft rocks is nearly made and, resting from former labors, the stream flows so slowly under the overhanging branches of birch trees that its motion is almost imperceptible. Shaded by trees and hills, steep-banked, cold and motionless, it offers few of those attractions to dragonflies which I had hoped to find. There are no gorges and only an occasional low, short ripple (locally shoal) relieves the monotony of long stretches of canal like tranquility. The perfume of flowering laurels on the verdure-clothed banks saturate an atmosphere in which sound and motion would be as sacrilegious as in the chamber of death. Doubtless at seasons there is greater activity. On the dates above mentioned (June 23 and 24) only nine species of dragonflies were taken. I believe collecting three weeks earlier would have revealed a greater number of species and individuals, and possibly a great many Gomphines might have been found at the ripples at this time.

## DRAGONFLIES.

1. *Calopteryx angustipennis*. Not rare, frequenting willow-herb at ripples. This species was taken by Mr. Chas. Dury along Little Blue River, Crawford County, Indiana, May 27, 1904. This lost species, rediscovered in 1899 in Pennsylvania and Ohio, seems to have unaccountably escaped collectors for a long period.

2. *Argia tibialis*. This species was found abundantly along Sycamore Creek, a tributary of the Cumberland, near Nashville, Tenn., during the spring of 1901.

3. *Enallagma exsulans*. This is the river *Enallagma* of the Ohio River system.

4. *Progomphus obscurus*. This common gomphine was not rare along the Rockcastle.

5. *Dromogomphus spinosus*. What has been said of *Progomphus obscurus* applies to this species.

6. *Gomphus dilatatus*. Two males, resting on boulders in mid-stream in a ripple, were taken.

7. *Lanthus albistylus*. Observed in the afternoon resting on boulders and pebbles about a wide slow ripple. The nymph, described by Hagen from Kentucky as possibly *Tachopteryx thoreyi* and referred by Needham to *Lanthus parvulus*, in all probability is this species.

8. *Hagenius brevistylus*. Recently emerged individuals of both sexes were taken.

9. *Macromia illinoiensis*. Several males taken flying along the river.

## CRAYFISHES FROM KENTUCKY.

Notes and determinations by Dr. A. E. Ortmann.

1. *Cambarus bartoni* (F.) 3 males (second form), 1 female. Rostrum more tapering and narrower than in typical specimens from eastern Pennsylvania; but a similar form of rostrum is found in (chiefly young) individuals from western Pennsylvania. Tubercles of inner margin of hand more strongly developed, with slight indications of a second row.

Small streams tributary to Rockcastle River, Livingston, Rock Castle Co., Ky. E. B. Williamson.

2. *Cambarus extraneus* Hag. 2 males (second form), 2 females. Hagen, Ill. Cat. Mus. Harvard. 3. 1870 p. 73. Faxon, Mem. Mus. Harvard. 10. 1885 p. 84. Faxon, Pr. U. S. Mus. 20. 1898 p. 650.

Areola slightly longer than half of anterior section of carapace; fingers of chelae elongated (characters of *girardianus*). Lateral spine of carapace well developed; external orbital spine comparatively small; distal upper end of meropodite of cheliped with two spines (in one specimen with three, the third anterior to the others, and small).

The specimens thus agree apparently with those mentioned by Faxon (1898) from Big Cahawba River, central Alabama, (Alabama River drainage), which are said to be intermediate between *extraneus* and *girardianus*. The typical *extraneus* is reported from Etowah River, Rome, Floyd Co., Ga. (Alabama River drainage); the var. *girardianus* Fax. is known from Cypress Creek, Lauderdale Co., Ala., and from Eastanaula Creek, near Athens, McMinn Co., Tenn. (both belonging to the Tennessee River drainage). The new locality belongs to the Cumberland River, and it is remarkable that instead of finding here *girardianus*, we have a transitional form, which rather resembles *extraneus*.

Rock Castle River, Livingston, Rock Castle Co., Ky. E. B. Williamson.

3. *Cambarus putnami* Fax. 2 males (second form), 1 female. Agree well with description. This species is positively known from the following localities only: Kentucky, Grayson Springs, Grayson Co.; Green River, near Mammoth Cave; Cumberland Gap.

Rock Castle River, Livingston, Rock Castle Co., Ky. E. B. Williamson.

#### FRESH-WATER MUSSELS.

My specimens were kindly determined by Dr. Dall and a complete set has been placed in the National Museum. The following arrangement and nomenclature are those of Simpson's Synopsis from which work I have copied the distribution of each species.

1. *Lampsilis ventricosus* Barnes. Entire Mississippi drainage; St. Lawrence system; Nelson River and tributaries.

2. *Lampsilis multiradiatus* Lea. Entire Ohio River drainage; southern Michigan.

3. *Lampsilis taeniatus* Conrad. Tennessee and Cumberland River systems.

4. *Lampsilis rectus* Lamarck. Entire Mississippi drainage; Alabama River drainage; Red River of the North; St. Lawrence system.

5. *Lampsilis trabalis* Conrad. Kentucky and streams of Tennessee; Clinch River, Virginia.

6. *Lampsilis glaus* Lea. Ohio River drainage; Warsaw, Indiana; (probably St. Lawrence drainage) southern Michigan; White River, Carroll County, Arkansas.

7. *Medionidus acutissimus* Lea. Alabama River system.

8. *Medionidus subtentus* Say. Tennessee and Cumberland River systems.

9. *Tritogonia tuberculata* Barnes. Mississippi drainage generally; streams falling into the Gulf of Mexico from the Alabama system west to Central Texas.

10. *Ptychobranhus phaseolus* Hildreth. Ohio, Tennessee and Cumberland River systems; peninsula of Michigan; Kansas; Arkansas; Indian Territory; Louisiana.

11. *Strophitus edentulus* Say. Entire Mississippi drainage; St. Lawrence system and south in streams draining into the Atlantic to North Carolina; north in the British possessions to Lake Winnipeg; southwest to central Texas; Tyner, Alabama.

12. *Pegias fabula* Lea. Cumberland and Tennessee river systems.

13. *Alasmidonta truncata* B. H. Wright. Upper Mississippi drainage; Ohio, Cumberland and Tennessee River systems; Michigan; Upper St. Lawrence drainage.

14. *Unio gibbosus* Barnes. Entire Mississippi drainage; St. Lawrence and its tributaries; Alabama River system; southeast into Florida; southwest to the Guadalupe River, Texas.

15. *Pleurabema clava* Lamarck. Ohio, Cumberland and Tennessee River systems.

16. *Quadrula coccinea* Conrad. Entire upper Mississippi drainage; St. Lawrence basin in various localities.

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